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Single Photon Quantum Cryptography



Abstract

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Received 6 June 2002; published 10 October 2002

We report the full implementation of a quantum cryptography protocol using a stream of single photon pulses generated by a stable and efficient source operating at room temperature. The single photon pulses are emitted on demand by a single nitrogen-vacancy color center in a diamond nanocrystal. The quantum bit error rate is less than 4.6% and the secure bit rate is 7700 bits/s. The overall performances of our system reaches a domain where single photons have a measurable advantage over an equivalent system based on attenuated light pulses.

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URL: <http://link.aps.org/abstract/PRL/v89/e187901>

DOI: 10.1103/PhysRevLett.89.187901

PACS: 03.67.Dd, 42.50.Dv

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